DESCRIPTION

OF AN

IMPROVED APPARATUS

FOR

INHALATION OF VAPOUR IN THE CURE OF DISEASES.

BY

JOHN GAIRDNER, M.D.

FELLOW OF THE ROYAL COLLEGE OF SURGEONS, EDINBURGH.

I BEG leave to introduce to the notice of your readers a very simple instrument for the inhalation of the vapour of hot water in the cure of diseases, which I have for some time past employed in my practice, and which appears to me to possess very considerable advantages over every other apparatus for the same purpose, that I have yet met with.

Most of the inhalers at present in use act on the principle of causing a stream of air to pass through a quantity of hot water in the body of the apparatus, and thus charging it with heat and with aqueous vapour. This is the principle of Mudge's inhaler, which is the one that used to be thought the best; as well as of Mr Hercy's more recent invention, now more commonly employed, and of others which might be mentioned. All these contrivances seem to me to be open to this objection, that they require a very considerable effort of the muscles of inspiration in using them; for, the air entering the apparatus, has to overcome the resistance of a column of water in the tube by which it enters, the amount of which resistance varies according to the

distance between the inferior extremity of the tube and the surface of the hot water. Now, this resistance is overcome solely by the effort which the patient makes to inspire; for the rarefaction which is thus produced of the air in the upper part of the inhaler, occasions a quantity of the external air to rush into the vessel by means of the atmospherical pressure. The force requisite for this purpose is so considerable, that, if the inhalation is practised for any length of time through an instrument so constructed, even in a sound state of the chest, the effort is felt to be fatiguing; and, in the diseases of the respiratory organs, it is so painful as absolutely to prevent the possibility of using these instruments in many of the cases in which the inhalation of vapour as a remedy is most particularly indicated; so that I have frequently seen patients of their own accord lay aside the inhaler, and resort to the familiar plan of inhaling through the tube of a funnel inverted over a basin of hot water. Repeated experience of this fact first led me to think of devising an instrument free from this objection; and I am persuaded, that many of those, who would be most benefited by inhalation, are deprived of this benefit solely from the want of a more perfect instrument; for it is plainly those whose complaints are *most* severe, and who, therefore, are *most* in need of the relief which remedies are capable of affording, that are *least* capable of overcoming the resistance occasioned by the common instruments.

The expedient of the inverted funnel is entirely free from the above objection, though the rapid cooling of the water renders it very inefficient. The instrument which I am now about to describe, possesses all the advantages both of the common inhalers of the inverted funnel, while it is free from their defects. It consists of a kettle, partially filled with hot water, which is kept boiling by the flame of a spirit-lamp placed under it. From the upper part of it a tube issues, which is connected with a longer tube, in such a way as to be capable of being bent at different angles, to suit it to the position of the patient. The extremity of the long tube is wrapped with a piece of linen, to prevent the heated metal from burning the patient's lips. It is then received into his mouth, and he inhales into his lungs the steam generated by the boiling, mixed with a large quantity of air, which enters freely by perforations in the top of the kettle.

The whole apparatus is constructed of tin, and may be had at a moderate price. Several of them have been made by my directions by Mr Steele, 86, Rose-Street, who is fully acquainted with their form and dimensions.

The utility of inhalation as a remedy is, in certain diseases,

so great, as to entitle it to be more generally adopted than it is at present. Catarrhal, asthmatic, and pneumonic affections, are those to which it seems most useful. In all of these an expectoration of phlegm occurs, which is often difficult, and attended with severe coughing and laborious breathing. The inhalation of hot vapour, by expediting and facilitating the process of expectoration, has a great effect in relieving all these symptoms. This is remarkably the case in the asthmatic paroxysm, which may often be shortened by this easy resource, and the patient saved from a great deal of suffering; but so difficult is the use of ordinary inhalers to persons labouring under asthma, that they generally employ the less efficacious method of the funnel, which I have already alluded to.

Inhalation of vapour has also been employed in quinsy and in phthisis pulmonalis. In the former, I believe, that all its salutary effects will be better obtained by means of gargles and diluent drinks. In the latter, I have not found it generally serviceable. A cool dry air seems to be much more suitable to the ordinary states of the disease; but when it is combined with catarrh, or inflammation of the mucous membrane of the windpipe, and of the cells of the lungs, the inhaler may be had recourse to with advantage. From the great expectoration which occurs in pertussis, I think it probable that it might be serviceable in that disease; but of this I have no experience, the patients being generally young, and not easily persuaded to employ an expedient of this description.

Figure 5th Plate II. will explain the construction of the inhaler. A is the kettle, which has a number of orifices in the upper part of it for admitting air to mix with the steam as it rises, and which is furnished with a spout, B, for admitting the hot water. C D is the bottom of the kettle. Under it is a hollow space, open on one side, for admitting the spirit-lamp E. From the top of the kettle issues the tube F G, which is adapted at the point G to the tube G H, the former sliding a little way within the latter. The tube G H is thus capable of being turned on the point G in any direction which may best suit the posture of the patient. The following directions must be attended to in using it. The lamp is to be taken out; and a quantity of hot water put into the kettle to warm it, and poured off again. The kettle is then to be filled about half full of water, quite boiling. If, in consequence of the neglect of these precautions, the temperature of the water is under the boiling point, the lamp will not have power sufficient to make it boil.

The issue of steam is regulated by the lamp, which, if properly trimmed, ought just to produce vapour of the requisite

degree of heat. By shortening and compressing the wick, or by lengthening and dispersing it, the boiling may be repressed or accelerated, and the vapour received into the lungs rendered cooler or hotter according to circumstances. The extremity, H, of the long tube must be well wrapped with linen before it is used, in such a way as not to obstruct the tube, while it defends the lips from the hot metal.